FOUR QUARTER
MATH FRAMEWORKS

for Comprehensive Instruction and Assessment

EXAMPLES OF QUARTER-BY-QUARTER PRIORITIES

Based on the Common Core standards and PARCC Requirements.

Each week use a **Layered Curriculum** approach in which:

✓ Each week all students master **essential content and skills**.

✓ Each week students have opportunities to **exceed**—to do and learn more.

Monday	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
Preview Orient Model Inspire	Model and Guide	Guide and Develop	Assess and Clarify	Fix, Finish, Expand

KINDERGARTEN Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Work with Others

Kindergarten Overview from the Common Core State Standards

Counting and Cardinality
Know number names and the count sequence
Count to tell the number of objects
Compare numbers.

Operations and Algebraic Thinking
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Count, read, write numbers 1-10 *Goal 8: Algebra and Analytic Methods* Describe patterns relationships Sort Classify Identify Patterns *Goal 9: Geometry* Identify and describe shapes *Goal 10:* Collect, organize and display data	*Goal 6: Numbers and Operations* Count to answer "how many" questions Compare whole numbers Recognize number words to 10 Solve addition and subtraction problems by using objects or drawings *Goal 7: Estimate and Measure* Classify objects and count the objects in categories *Goal 8: Algebra and Analytic Methods* Add and subtract within 5 *Goal 9: Geometry* Identify shapes as two-dimensional or three Model and draw shapes. *Goal 10:* Collect, organize and display with graphs	*Goal 6: Numbers and Operations* Represent number facts to 20 Add Count by 2's, 10's Count backwards Use matching and counting to tell if the number of objects is the same, more, or less than another. *Goal 7: Estimate and Measure* Describe measurable attributes of objects. Directly compare two objects. *Goal 8: Algebra and Analytic Methods* Compose and decompose numbers from 11 to 10 into ten ones and some more ones. Goal 9: Geometry Compose simple shapes to form larger ones *Goal 10:* Data collection Interpretation	Goal 6: Numbers and Operations Count to 100 by ones and tens Subtract Word problems Fractions Goal 7: Estimate and Measure sizes time Goal 8: Algebra and Analytic Methods Decompose numbers less than or equal to 10 into pairs *Goal 10:* Collect, organize, display Data collection and interpretation

FIRST GRADE Example of a Four-Quarter Math Framework
Learning Skills: Listen Follow Directions Work with Others

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Count and read numerals to 100 Addition of single digits Subtraction of single digits Count by 2's to 50 Using words "greater than," "less than," and "equal to." Add and subtract within 20 *Goal 7: Estimate and Measure* Tell and write time in hours and half-hours Order three objects by length *Goal 8: Algebra and Analytic Methods* Use simple addition and subtraction number sentences *Goal 10:* Number lines	*Goal 6: Numbers and Operations* Rounding by 5's, and 10's Count backwards from 20 Count to 120. Addition/subtraction double digit (tens/ones) to 50 Represent and solve problems involving addition and subtraction. *Goal 7: Estimate and Measure* Money value (penny, nickel, dime) *Goal 8: Algebra and Analytic Methods* Solve missing addend problems draw word problems Goal 9: Geometric shapes: Circle, square, triangles Build and draw shapes Goal 10: pictographs	*Goal 6: Numbers and Operations* Place value tens/ones Property of zero Apply properties of operations as strategies to add and subtract. *Goal 7: Estimate and Measure* Money Using ruler inch/feet Fractions Ω of 6, etc. *Goal 8: Algebra and Analytic Methods* Determine if equations involving addition and subtraction are true or false Determine the unknown whole number in an addition or subtraction equation Geometry Partition circles and rectangles into two and four equal shares. *Goal 10:* Organize, represent, and interpret data with up to three categories. Read and interpret bar graphs	*Goal 6: Numbers and Operations* Place value ones, tens, hundreds, Compare whole numbers up to 100 Add within 100 including adding a two-digit number and a one-digit number Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 *Goal 7: Estimate and Measure* Liquid measures *Goal 8: Algebra and Analytic Methods* Determine the unknown whole number in an addition or subtraction equation *Goal 10:* Read and interpret bar graphs

SECOND GRADE Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations counting by 2's, 3's, 5's, and 10's to 1,000 Add and subtract one and two digit numbers within 20 Math facts-number families, doubles Use place value to add and subtract *Goal 7: Estimate and Measure* Money-coins and value Estimate lengths using inches, feet, centimeters, meters *Goal 8: Algebra and Analytic Methods* Vocabulary Read and write number words Read and interpret information from a line graph and use objects and drawings to form line graphs *Goal 10:* Collecting data from graphs, use to add and subtract, compare and find patterns.	*Goal 6: Numbers and Operations* Patterns review Add and subtract two digits with regrouping Comparing whole numbers (odd and even) Comparing numbers >,<, =, and unequal. Use addition to find the total number of objects in arrays with up to 5 rows and 5 columns *Goal 7: Estimate and Measure* Time-hour, 1/2hr, 5 min, minute Money-add and subtract with regrouping *Goal 8: Algebra and Analytic Methods* Explain method used to solve problems (solutions) Write an equation to express the total as a sum of equal addends *Goal 10:* Making graphs Writing questions Analyzing data gathered from graphs, charts Make graphs	*Goal 6: Numbers and Operations* Add and subtract (two and three digit with regrouping) Read and write numbers to 1,000 using base-ten numerals, number names, and expanded form *Goal 7: Estimate and Measure* Relate addition and subtraction to length Compare lengths in standard units of measure *Goal 8: Algebra and Analytic Methods* Read, write and solve word problems Illustrating fractions Create interpret and analyze information from graphs. *Goal 9: Geometry* Identify shapes- 2 and 3 dimensional objects *Goal 10:* Reinforce addition and subtraction facts and concepts. Introduce multiplication	*Goal 6: Numbers and Operations* More practice Addition and subtraction (two and three digit numbers) with and without regrouping Know from memory all sums of two one-digit numbers Compare two three-digit numbers based on meanings of the tens, hundreds, and ones using symbols to record the comparisons Add up to four two-digit numbers using strategies based on place value and properties of operations *Goal 7: Estimate and Measure* Congruency Symmetry Perimeter, area and volume *Goal 8: Algebra and Analytic Methods* Read, write and solve word problems *Goal 10:* Continue multiplication

THIRD GRADE Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Adding and subtracting (single, double, triple digits and money) Regrouping Place value (reading/numbers) up to 100,000 Greater than and less than Number line Classify numbers, odd/even Interpret products of whole numbers, e.g., interpret 5 °— 7 as the total number of objects in 5 groups of 7 objects each *Goal 7: Estimate and Measure* Rounding to tens and hundreds Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. Goal 8: Algebra and Analytic Methods Word problems single step Addition and subtraction including money *Goal 10:* Write and solve word problems Solve problems using graphs and tables	*Goal 6: Numbers and Operations* Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, Determine the unknown whole number in a multiplication or division equation relating three whole numbers. Money (grouping and counting change, decimals) Elapsed time Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction *Goal 7: Estimate and Measure* Rounding (tens, hundreds, thousands) Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). *Goal 8: Algebra and Analytic Methods* Identify unnecessary information Evaluate methods and solutions Use variables and number sentences to represent solutions to problems *Goal 9: Geometry* Geometric figures (identify, describe, measure and compare) Perimeter, area, volume *Goal 10:* Identify and use multiple facts Solve problems using graphs and charts	*Goal 6: Numbers and Operations* Multiply 2 and 3 digits Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 °— 80, 5 °— 60) using strategies based on place value and properties of operations. *Goal 7: Estimate and Measure* Compare quantities Volume Mass Metric units Standard measurement Rounding *Goal 8: Algebra and Analytic Methods* Solve multi-step problems involving data Interpretation *Goal 10:* Solve problems using graphs and charts Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	*Goal 6: Numbers and Operations* Long division Develop understanding of fractions as numbers: number line; equivalence Money *Fluently multiply and divide within 100* *Goal 7: Estimate and Measure* Rounding Time *Goal 8: Algebra and Analytic Methods* Word problems *Goal 10:* Solve problems using graphs and charts Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

THIRD GRADE MATH PRIORITIES

Priorities identified through the PARCC online resources and CPS Learning Targets
http://www.chicagoteachingandlearning.org/component/content/article/235-learning-targets.html

Problem Solving

Students need to be able to…

- ❑ solve problems in each of these areas of math.
- ❑ show the steps they take
- ❑ explain the reasons for their choices of strategies.

Math Content	Examples of Questions
number sense and operations ❑ addition ❑ base-ten number system ❑ decimals ❑ division ❑ equals ❑ equivalent forms of simple fractions ❑ estimation ❑ fractions ❑ monetary units ❑ multiplication ❑ number line ❑ ordered pairs ❑ place value ❑ repeating ❑ representations of numbers to 10,000 ❑ subtraction ❑ value ❑ whole numbers **symbols** Operations Equals Greater than Less than	• Lee collected 489 rocks for his science project. Sue collected 100 fewer rocks than Lee. How many rocks did Su collect? • Ed has 19 eggs. He has 2 empty egg cartons. Each carton can hold 12 eggs. How many more eggs does Ed need to fill the 2 egg cartons • Which has 1/3 shaded? (circle graph) • John buys 2 notebooks. Each notebook costs $1.80. John gives the clerk $5.00. How much change does he get? • A month ends on a Tuesday. On what day does the next month begin? • Tom buys 5 toy cars. Each car costs $0.98. Which shows how much money Tom needs?
geometry ❑ 2-dimensional shapes ❑ 3-dimensional shapes ❑ congruence ❑ coordinate system ❑ hexagon ❑ lines of symmetry ❑ parallel ❑ polygon ❑ rectangle ❑ reflection/flips ❑ rotations/turns ❑ translation/slides vertex	• What is the area of this figure? • What is the perimeter of this square? • How many sides does a hexagon have? • Which has exactly one vertex? • Which shows only a flip across the line? • Which lines look parallel? • Which shapes look congruent?

Math Content	Examples of Questions
algebra ❑ comparison problems ❑ equations ❑number sentences ❑pattern problems	• Look at the pattern. 82, 88 94, ___, 106, 112. What is the missing number? • What number goes in the box to make the number sentence true? • What number goes in the box to make this number sentence true? 12 - ___ = 3.
measurement ❑ area ❑ capacity/volume ❑ Celsius, Fahrenheit ❑ elapsed time ❑ estimate ❑ inch, foot, yard ❑ length ❑ mass/weight ❑ money ❑ non-standard unit ❑ ounce, pound ❑ perimeter	• Use your centimeter ruler. What is the length of this crayon in centimeters? • How many oranges equal the same weight as one cube? • What is the distance from point M to point N? (on a number line)
data analysis and probability ❑ chart ❑ circle graph ❑ graph ❑ line graph ❑ mean/average ❑ ❑ median ❑ mode ❑ probability and counting principles ❑ table ❑ tally, tally chart	• What number pair shows the location of the square? • A class votes for their favorite kinds of books. How many more students voted for books about adventures than books about sports? • A class makes a chart about what kind of pets they have. The class has 24 students. How many students have a cat for a pet? • The chart shows the shoe size for six students. What is the mode for the data in the chart? • Dan will spin the arrow many times. The arrow is least likely to stop on ____. (Circle with colored sections and spinner.) • Holly throws a penny in the air 100 times. The penny falls on the table each time. How many times will the penny probably show tails?

FOURTH GRADE Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Place Value Powers of ten Whole Numbers: Add, subtract, Multiply and divide by one two and three digits Use multiplication and division facts < > = 10,000 Number line Add and subtract fractions with like denominators Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. *Goal 7: Estimate and Measure* Length, Area and perimeter Standard and metric measures *Goal 8: Algebra and Analytic Methods* Solve open number sentences Variables and equations Single step =,-,x, and division problems Goal 10: Graphs, charts, tables Compare, interpret data	*Goal 6: Numbers and Operations* Decimals-read, write identify (Thousand place) Compare decimals Fractions (relate to decimals) Percents Add, subtract, unlike fractions and mixed numbers Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. Gain familiarity with factors and multiples. Compare two fractions with different numerators and different denominators, *Goal 7: Estimate and Measure* Measure drawings models and angles Temperature and weight Conversions *Goal 8: Algebra and Analytic Methods* 2 or more step word problems-measurement *Goal 9: Geometry* Use approximate units of measure *Goal 10:* Gather, organize, display data Graphing, tallies, mode, range Draw conclusions about probability	*Goal 6: Numbers and Operations* Identify model represent equivalent fractions Relate fractions/decimals Round decimals Use place value understanding to round multi-digit whole numbers to any place. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, Compare two decimals to hundredths by reasoning about their size. *Goal 7: Estimate and Measure* Circle diameter radius and circumference Scale-maps Metric system Square units *Goal 8: Algebra and Analytic Methods* Multi-step measurement *Goal 9: Geometry* Figures, categorize Describe identify symmetry, shapes, sizes *Goal 10:* Interpret relationships Draw conclusions from data including probability	*Goal 6: Numbers and Operations* Prime and composite numbers Percentages ratios proportions-select strategies Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. *Goal 7: Estimate and Measure* Compare and order measures in standard and metric units *Goal 8: Algebra and Analytic Methods* Algebraic equations *Goal 9: Geometry* Properties and relationships-geometry lines, points, rays, angles Describe parts of geometric figures *Goal 10:* Mean or average of series of numbers Draw conclusions probability

FOURTH GRADE MATH PRIORITIES

Priorities identified through the PARCC online resources and CPS Learning Targets
http://www.chicagoteachingandlearning.org/component/content/article/235-learning-targets.html

Problem Solving

Students need to be able to…

- ❑ *solve problems in each of these areas of math.*
- ❑ *Solve problems using number relationships*
- ❑ *Use ratios to describe problem situations*
- ❑ *show the steps they take and explain the reasons for their choices of strategies.*

Math Content			Examples of Questions
number sense and operations ❑ addition ❑ base-ten number system ❑ compare ❑ decimal point ❑ decimals ❑ denominator ❑ division ❑ equals ❑ equivalent forms of simple fractions ❑ equivalent representations of fractions and decimals ❑	❑ estimate ❑ estimation ❑ fractions ❑ greater than ❑ less than ❑ monetary units ❑ multiplication ❑ number line ❑ numerator ❑ ordered pairs ❑ place value	❑ repeating ❑ representations of numbers to 1 million ❑ subtraction ❑ sum ❑ total ❑ unit ❑ value	• What is the value of 6 in 5,360? • Which is equal to 7 x 8? • Which number sentence is true? • Which is correct (numbers with greater than symbol). • Ms. Fields needs 30 cupcakes. There are 4 in each package. How many does she need to get? • Lee collected 489 rocks. Sue collected 100 fewer rocks than Lee. How many rocks did Su collect? • The average song is 3 minutes long. How many songs can be played in 16 minutes? • There are 32 students in a class. There are 13 girls in the class. What fractional part of the class is boys?
geometry ❑ 2-dimensional properties ❑ 2-dimensional shapes ❑ 3-dimensional properties ❑ 3-dimensional shapes	❑ congruence ❑ coordinate system ❑ hexagon ❑ lines of symmetry ❑ parallel ❑ polygon	❑ rectangle ❑ reflection/flips rotations/turns ❑ translation/slides ❑ vertex	• What is the volume of this shape? • How many faces does a rectangular prism have in all? • Which shape has only 1 line of symmetry? • The hexagon is cut by the line m. What is the shape of each piece after it is cut? • Exactly how many right angles and vertices does a rectangle have?

Math Content	Examples of Questions
Algebra/algebraic thinking ❑ comparison problems ❑ equations ❑ number sentences ❑ pattern problems ❑ represent mathematical situations using words, tables, graphs	• Raj earns 5 points for each question he answers correctly. p is the number of questions Raj has correct. What is the total number of points Raj earns? • Which is true if b = 5? • What is the value of M? • Raj earns 5 points for each correct answer. Raj gets p correct answers. Which gives the total number of points he earns?
measurement ❑ angles ❑ area ❑ capacity/volume ❑ Celsius, Fahrenheit ❑ elapsed time ❑ estimate ❑ gallon ❑ gram ❑ height ❑ inch ❑ inch, foot, yard ❑ kilogram ❑ kilometer ❑ length ❑ mass/weight ❑ money ❑ non-standard unit ❑ ounce, pound ❑ perimeter ❑ time ❑ yard	• Use your inch ruler to help you answer this question. How long is the line segment MN? • Ben is 1 ½ years old. How many months are equal to 1 ½ years?
data analysis and probability ❑ c chart ❑ circle graph ❑ graph ❑ line graph ❑ mean/average ❑ median ❑ mode ❑ ❑ pattern ❑ probability and counting principles ❑ table ❑ tally, tally chart ❑ Venn diagram ❑	• Tim's mother put these cookies on a plate. Tim takes one cookie without looking. Which will he most likely get? • Sally put these shapes in a box. She dropped the box. One shape fell out. What is the probability that a ball fell out? • Tom saves the same amount of money each week. How much money will Tom save by week 4? • This graph shows how many students ride bikes to school. Whose class has the most students who ride bikes to school? • John's class voted on games they like to play. Which two games got the most votes? • Which statement is true about the data in the table?

FIFTH GRADE Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Place value Powers of 10 Decimals Ratios Proportions Percents Use place value understanding to round decimals to any place. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; *Goal 7: Estimate and Measure* Standard Metric Rounding Elapsed time *Goal 8: Algebra and Analytic Methods* Single step addition, subtraction, multiplication, division measurement conversions Goal 10: Graphing-line, circle, bar Probability of an event Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	*Goal 6: Numbers and Operations* Fractions-improper, mixed, simplify Add, subtract, and multiply fractions Division and multiplication of decimals and fractions *Goal 7: Estimate and Measure* Estimation, rounding, division Unit conversions *Goal 8: Algebra and Analytic Methods* Multi-step problems using fractions, decimals, measurement, and conversion. Analyze problem solving strategies Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. *Goal 9: Geometry* Angles Polygons Circle Solids Area, perimeter, volume *Goal 10:* Tallying line plot, stem and leaf Make predictions based on data in a graph or set of data Range, mean, median, mode	*Goal 6: Numbers and Operations* Use percents, decimals, fractions in problem solving *Goal 7: Estimate and Measure* Weight Mass Volume Speed Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. Goal 9: Geometry Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. *Goal 8: Algebra and Analytic Methods* Algebraic representation Solve for the unknown Analyze problem solving strategies *Goal 10:* Averages Range, mean, median, mode probability	*Goal 6: Numbers and Operations* Identify relationships: whole number, fraction, percentage, decimal *Goal 7: Estimate and Measure* Time, distance, area Goal 9: Geometry Classify two-dimensional figures in a hierarchy based on properties. *Goal 8: Algebra and Analytic Methods* Algebra concepts Compare alternative strategies to solve problems *Goal 10:* Use graphs and tables to interpret data in science and social studies

FIFTH GRADE MATH PRIORITIES

Priorities identified through the PARCC online resources and CPS Learning Targets
http://www.chicagoteachingandlearning.org/component/content/article/235-learning-targets.html

Problem Solving Students need to be able to…

- ❑ Solve problems in each of these areas of math.
- ❑ Solve problems using number relationships
- ❑ Use ratios to describe problem situations
- ❑ Show the steps they take
- ❑ Explain the reasons for their choices of strategies.

Math Content	Examples of Questions
number sense and operations ❑ commutative ❑ compare and order numbers ❑ decimals ❑ denominator ❑ distributive ❑ equals ❑ equivalent forms of simple fractions ❑ equivalent representations of fractions and decimals ❑ estimate ❑ formula ❑ fractions ❑ greater than ❑ identity ❑ less than ❑ monetary units ❑ number line ❑ numerator ❑ order of operations ❑ percents ❑ proportional reasoning ❑ value	• A school has fifty teachers. Six out of every ten teachers have a pet. How many teachers have a pet? • Anish went to sleep at 9:00 pm and woke up at 6:30 am. How long did he sleep? (Note: also requires fraction knowledge.) • The drawing below is an input-output machine. The input is 5. What is the output (add 7, subtract 3). • Tim's mother put these cookies on a plate. Tim takes a cookie without looking. Which will he most likely get? (Cookies of different colors on plate>) • The spinner has 6 equal parts. What is the probability that the arrow will land in a space labeled with an odd number? • This graph shows daily temperatures for North Town. What is the difference in the average daily temperatures for Monday and Wednesday? • Beth recorded the highest temperature for seven days. 90, 87, 95, 93, 88, 88 degrees. What is the mean (average) temperature? • The table shows the area in square miles for 5 states. The total number of square miles for three states is 119,156. Which 3 states are in the total?

Math Content	Examples of Questions
algebra ❑ equations ❑ expressions ❑ input-output tables ❑ inverse relations ❑ number sentences ❑ pattern problems ❑ represent mathematical situations using words, tables, graphs ❑ unknown quantities	• What is the value of the expression below when M = 4? • Mr. Smith is 36 years old. His son is 8 years old. Mrs. Smith is n years old. Their three ages added together equals 77. Which correctly represents this information? • Brandon weighs 58 pounds. Nate weighs less than Brandon. If Nate weighs **n** pounds, which of these is true?
geometry and measurement ❑ 2-dimensional properties ❑ 2-dimensional shapes ❑ 3-dimensional properties ❑ 3-dimensional shapes ❑ angles ❑ angles—acute, obtuse, right, straight ❑ area ❑ capacity/volume ❑ Celsius, Fahrenheit ❑ congruence ❑ coordinate system ❑ cube ❑ cylinder ❑ diameter ❑ equilateral triangle ❑ estimate ❑ height ❑ hexagon ❑ intersecting lines ❑ isosceles triangle ❑ length ❑ line segments ❑ lines of symmetry ❑ mass/weight ❑ money ❑ non-standard unit ❑ parallel ❑ perimeter ❑ perimeter perpendicular lines ❑ polygon ❑ ray ❑ reflection/flips ❑ rotations/turns ❑ scale ❑ sphere ❑ translation/slides vertex, vertices	• What is the perimeter of this figure? • Which streets (on a diagram) do not intersect? • What type of angle is made by the hands of the clock? • Which two figures look congruent? • The dimensions of a rectangular prism are shown below. What is the volume of this prism? (Volume = l x w x h) • Which is true about the prism (answers include intersects, parallel, perpendicular lines) • Use your centimeter ruler to answer this question. Which is closest to the perimeter of this triangle? • What is the distance from point G to point H (on a number line). • On Todd's map, 1 inch = 200 miles. It is 5 ¼ inches from Todd's house to his friend's house on the map. How many miles it is from Todd's house to his friend's house?
data analysis and probability ❑ chart ❑ circle graph ❑ graph ❑ line graph ❑ line plot ❑ mean/average ❑ median ❑ mode ❑ pattern ❑ predict ❑ probability and counting principles ❑ range ❑ table ❑ tally, tally chart ❑ Venn diagram	• This graph shows daily temperatures for North Town. What is the difference in the average daily temperatures for Monday and Wednesday? • Beth recorded the highest temperature for seven days. 90, 87, 95, 93, 88, 88 degrees. What is the mean (average) temperature? • The table shows the area in square miles for 5 states. The total number of square miles for three states is 119,156. Which 3 states are in the total?

6th Grade Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Whole numbers through trillions Compare and order quantities Powers and exponents *Goal 7: Estimate and Measure* Whole and decimal numbers (addition, subtraction, multiplication, and division) Integer number line *Goal 8: Algebra and Analytic Methods* Order of operations Write algebraic expressions Goal 10: Qualifiers Gather, organize, and display data Schedules Tables Range, mean, median, and mode Tallies Line plots Line, bar, and circle graphs Use rates and derived units in real-life situations Scattergrams, stem and leaf plot and box and whisker plot Develop understanding of statistical variability.	*Goal 6: Numbers and Operations* Fractions (add, subtract, divide, multiply) Equivalent fractions Unlike denominators *Goal 9 Geometry* Geometric patterns and figures 2 to 3-dimensional shapes Line segments Bisectors Angles Triangles Circles Polygons Tessellation Congruence Construct Scale Drawings Measure and draw angles to the nearest 5 degrees using a protractor Create drawings or models representing specific measures *Goal 8: Algebra and Analytic Methods* Simplify algebraic expressions Represent and analyze relationships between dependent and independent variables. *Goal 10:* Communicate the results of a survey or experiment and use them to predict future results and make relevant decisions based on data gathered probability	*Goal 6: Numbers and Operations* Fraction, decimal and percent relationships *Goal 7: Estimate and Measure* Circumference Weight, capacity, length, temperature, and time Perimeter, Area and volume Measure and draw angles *Goal 8: Algebra and Analytic Methods* Create, describe, and solve problems involving open sentences Solve multi-step problems involving Numbers, currency, fractions, decimals and percents Goal 9 Geometry Solve real-world and mathematical problems involving area, surface area, and volume *Goal 10:* Ratios and probability Explain the concept of “Sample” Analyze, predict, discuss, and defend possible outcomes, probability, and odds involving cards, dice and board games. Summarize and describe distributions	Algebra Emphasize algebraic thinking during fourth quarter. Expand math concepts needing additional development.

SIXTH GRADE MATH PRIORITIES

Priorities identified through the PARCC online resources and CPS Learning Targets
http://www.chicagoteachingandlearning.org/component/content/article/235-learning-targets.html

Problem Solving

Students need to be able to…

- ❑ Solve problems in each of these areas of math.
- ❑ Use probability in problem-solving situations
- ❑ Make predictions
- ❑ Use ratios to describe problem situations
- ❑ Show the steps they take
- ❑ Justify a concept or relationship
- ❑ Explain the reasons for their choices of strategies.
- ❑ Explain the reasons for their choices of strategies.

Math Content	Examples of Questions
number sense and operations ❑ approximation ❑ commutative ❑ distributive ❑ equivalent representation of numbers ❑ estimate ❑ formula ❑ number systems ❑ order of operations ❑ properties ❑ proportional reasoning ❑ square	• What number goes in the box (given a multi-step number problem)? • Greg took five tests. Each test is worth 100 points. Here are Greg's scores: 85, 87, 87, 89, 9. What is his mean score for these five tests? • Which spinner is most likely to have the arrow stop on B? • Ann runs 100 meters in ten and sixty-two hundredths seconds. What is her time written as a number? • There are 50 beans in a bag. Twenty percent are red. How many are red? • Look at Tom's work list. How much time does it take to do all of his work?
algebra ❑ Associative property ❑ equations ❑ expressions ❑ inequalities ❑ inverse relations ❑ linear equation ❑ number sentences ❑ pattern problems ❑ table of values ❑ unknown quantities ❑ variable	• Mike has x baseball cards. Tyrone has 3 times as many. Frank has baseball cards. Which expression represents how many cards they have in all? • What is the value of the expression below when x = 6 and y = 2? • What value of n makes the equation below true? • Which correctly describes the rule between x and y? • Which table best fits the equation? • The graph shows a linear equation. If x is 7 on the graph, what is y? • Jan has 18 cards, Ray gives her v cards. She now has less than 30 cards. Which best describes her cards?

Math Content		Examples of Questions
geometry and measurement ❑ angles ❑ area ❑ area ❑ capacity/volume ❑ Celsius, Fahrenheit ❑ conversion ❑ coordinate system ❑ cube ❑ estimate ❑ height ❑ length ❑ line segment ❑ mass/weight	❑ money ❑ non-standard unit ❑ perimeter ❑ rectangular pyramid ❑ scale ❑ scale ❑ square prism ❑ three dimensional ❑ transformations ❑ triangular prism ❑ two-dimensional ❑ vertex ❑ vertices	• Use your ruler to answer the question. About how long and wide is the rectangle? • Which rectangle has an area of 24 square units and a perimeter of 20 units? • Which is closest to the measure of angle XYZ? • What should be the value for x in the triangle shown? • Lines w and x intersect lines y and z to make a rectangle. What is true? • Which streets do not intersect? • What solid figure will this pattern make when it is folded on the dotted lines? • Triangle RST is similar to triangle XYZ. Line RS corresponds to which side of triangle XY? • Use your centimeter ruler. How far is it, in feet, from the tree to the swing?
data analysis and probability ❑ chart ❑ circle graph ❑ graph ❑ line graph ❑ line plot ❑ mean/average ❑ median ❑ mode ❑ pattern ❑ predict ❑ probability ❑ range ❑ table ❑ tally, tally chart ❑ Venn diagram		• Students voted for their favorite books. How many more students voted for books about adventures than books about sports (based on bar graph). • The Venn Diagram shows how many more students play baseball and football. How many students play baseball but not football? • Carl has 16 books. The bar graph shows the number of each type of books. Which circle graph best shows the types of books Carl has?

7th Grade Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Rational numbers Percent Fractions decimals Equivalent fraction Ratios GCF, LCM Number expressions Analyze proportional relationships and use them to solve real-world and mathematical problems *Goal 7: Estimate and Measure* Area, volume, weight, time *Goal 8: Algebra and Analytic Methods* Graph data Properties of numbers Linear equations Write algebraic expressions Goal 10: Frequency distributions Probability as a fraction or percent Permutations Combinations	*Goal 6: Numbers and Operations* Inverse relationships (+, -, x, /) *Goal 7: Estimate and measure* Ordered pairs Proportional change Scale *Goal 8: Algebra and Analytic Methods* Variables Ordered pairs Coordinate plane Simplify algebraic expressions Use properties of operations to generate equivalent expressions *Goal 9: Geometry* Angels Parallel and perpendicular lines Congruence Geometric figures Solve real-life and mathematical problems involving angle measure, area, surface area, and volume *Goal 10:* Create and interpret graphs Mean, median, mode, range "best fit" Investigate chance processes and develop, use, and evaluate probability models	*Goal 6: Numbers and Operations* Expanded notation Exponential notation Scientific notation Rational/irrational numbers *Goal 7: Estimate and Measure* Measurement Rate Area, volume, weight *Goal 8: Algebra and Analytic Methods* Evaluate expressions Patterns *Goal 10:* Collect, analyze data Draw conclusions Use random sampling to draw inferences about a population Draw informal comparative inferences about two populations	Algebra Emphasize algebraic thinking during fourth quarter. Expand math concepts needing additional development. Consumer application (discount/irrational numbers)

SEVENTH GRADE MATH PRIORITIES

Priorities identified through the PARCC online resources and CPS Learning Targets
http://www.chicagoteachingandlearning.org/component/content/article/235-learning-targets.html

Problem Solving

Students need to be able to…

❑ solve problems in each of these areas of math.	❑ Use probability in problem-solving situations
❑ Make predictions	❑ Use ratios to describe problem situations
❑ show the steps they take	❑ justify a concept or relationship
❑ explain the reasons for their choices of strategies.	

Math Content		Examples of Questions
number sense and operations ❑ absolute value ❑ approximation ❑ commutative ❑ distributive ❑ equivalent representation of numbers ❑ estimate ❑ factors ❑ formula	❑ greatest common factor ❑ number systems ❑ order of operations ❑ properties ❑ proportional reasoning ❑ square ❑ square root	• Several students bought pencils to share equally. How many pencils did they buy? • Mike has 2 red apples and 3 green in his bag. He takes 2 apples. What is the probability that he takes 2 red? • Toby divides 12.9 by 8.6. His answer is 1.5 How can he check his answer? • Jo needs an 85% average on her five math tests. She earned xx, xx, xx and xx on her first four tests. What score must she earn on her fifth test to have an average of exactly 85% for all five tests?
algebra *Represent, translate, and interpret relationships between equations and/or inequalities and graphs in the coordinate plane.* ❑ Additive identity property ❑ Additive inverse property ❑ Associative property ❑ Balance ❑ Compound inequality ❑ Equations ❑ exponent ❑ expressions ❑ function ❑ inequalities	❑ inverse relations ❑ linear equation ❑ permutation ❑ prime factorization ❑ rational number ❑ scientific notation ❑ table of values ❑ variable **Algebraic Thinking** Represent, simplify, and solve mathematical relationships and situations with expressions, equations, and inequalities.	• There are 18 girls in a class. The ratio of girls to boys in the class is 3 to 2. How many boys are in the class? • Which is equal to 3x + 5 + x + 10 + 2y? • Which inequality represents the graph? • What value of x makes the inequality true? • A cheese pizza costs $6. Each topping costs $.85. Which gives the cost of a cheese pizza with t toppings? • Jen uses two steps to multiply 7(52). What property is she using? • Which is equal to 5(2a + 9)

Math Content	**Examples of Questions**
geometry and measurement ❑ angles ❑ area ❑ area ❑ capacity/volume ❑ Celsius, Fahrenheit ❑ complementary angles ❑ conversion ❑ coordinate system ❑ cube ❑ estimate ❑ height ❑ isosceles trapezoid ❑ length ❑ line segment ❑ mass/weight ❑ perimeter ❑ pyramid (regular) ❑ rectangular prism ❑ rectangular pyramid ❑ right cylinder ❑ scale ❑ scale ❑ square prism ❑ surface area ❑ three dimensional ❑ transformations ❑ trapezoid ❑ triangular prism	• Use your ruler to help you answer this question. What is the perimeter of triangle PQR? • What is the area of the polygon? What is the area of the square in square feet? • What is the surface of this rectangular prism? • Points M, N, Q, Z and X are all on circle P. Which represents the diameter? • The dimensions of rectangle N are ½ of rectangle M. Which must be true of the two angles? • Triangle PQT is similar to triangle PRS. What is the length of SR?
data analysis and probability ❑ chart ❑ circle graph ❑ graph ❑ line graph ❑ line plot ❑ mean/average ❑ median ❑ mode ❑ pattern ❑ predict ❑ probability ❑ range ❑ table ❑ tally, tally chart ❑ Venn diagram	• The table shows the pattern between the number of ___ and the number of ___. Which can be used to find the number of ___ needed for n ____? • Which point is at (3, -2) • Points K, L, and M are vertices on rectangle KLMN. What are the coordinates of vertex N? • A restaurant has 5 different hamburgers and 4 different drinks. How many combinations are possible? • Which set of bars represents the data in the circle graph? • Which graph shows a line of best fit?

8th Grade Example of a Four-Quarter Math Framework

Learning Skills: Listen ⇔ Follow Directions ⇔ Collaborate ⇔ Write Learning Reports ⇔ Use Graphic Organizers

1st quarter	2nd quarter	3rd quarter	4th quarter
Goal 6: Numbers and Operations Represent and use numbers in equivalent forms, percentages, repeating decimals Add, subtract, multiply, divide rational numbers, inverse relationships of math functions in equations LCM & GCF Exponents and roots *Goal 7: Estimate and Measure* Measure area, length, volume, and surface area problems for geometric shapes, use appropriate units. *Goal 8: Algebra and Analytic Methods* Determine whether equations or data given in tables define functions Basic properties associative, commutative, orders of operations of real numbers, solve linear equations using addition, multiplication and inverse operations Goal 10: Analyze, predict, discuss possible outcomes, estimate probability from a series of trials	*Goal 6: Numbers and Operations* Compare real numbers using ratios and proportions Scientific notation Exponents and roots *Goal 7: Estimate and Measure* Vertices as ordered pairs to determine area and perimeter of polygon, change in linear dimensions of an object changes perimeter, compare Fahrenheit and Celsius *Goal 8: Algebra and Analytic Methods* Domain of independent variables, range of dependent variables, solve problems written as expressed, describe how change in one variable affects others Define, use, interpret linear relationships and represent them with graphs and equations. Translate algebraic expressions into phrases and sentences, graph inequalities *Goal 9: Geometry* *Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space* *Goal 10:* Measures of central tendency, displaying data	*Goal 6: Numbers and Operations* Rational and irrational numbers, square roots, relationships among subsets of real numbers Consumer applications problems, inductive and deductive reasoning, justify solutions for problems *Goal 7: Estimate and Measure* Draw models Use derived units and indirect methods for obtaining measures *Goal 8: Algebra and Analytic Methods* Analyze real world situations and patterns to see if linear or other simple relationships exist Define, evaluate, and compare functions Use functions to model relationships between quantities Goal 9: Geometry Understand and apply the Pythagorean Theorem *Goal 10:* Visualize and represent three dimensional objects in two dimensions	Algebra This is the high school "prep" quarter, and while algebra should be developed during the entire school year, it is essential that students complete 8th grade ready for high school algebra.

EIGHTH GRADE MATH PRIORITIES

Priorities identified through the PARCC online resources and CPS Learning Targets
http://www.chicagoteachingandlearning.org/component/content/article/235-learning-targets.html

Problem Solving

Students need to be able to…

❑ solve problems in each of these areas of math.	❑ Use probability in problem-solving situations
❑ Make predictions	❑ Use ratios to describe problem situations
❑ show the steps they take	❑ justify a concept or relationship
❑ explain the reasons for their choices of strategies.	

Math Content	Examples of Questions
number sense and operations ❑ absolute value ❑ approximation ❑ commutative ❑ distributive ❑ equivalent representation of numbers ❑ estimate ❑ factors ❑ formula ❑ greatest common factor ❑ number systems ❑ order of operations ❑ properties ❑ proportional reasoning ❑ square ❑ square root	• Which point best represents the square root of 10 on a number line? • Look at the additional patterns below. Using this pattern, how many numbers must be added to equal 64? • Math books have between 200 and 600 pages. Which number line shows this? • A school had N students last year. There are n% more this year. How many students are there? • Amy has n/X of a yard of string to make bracelets. She needs n/Y of a yard to make each one. What is the most number of bracelets she can make?
algebra ❑ Additive identity property ❑ Additive inverse property ❑ Associative property ❑ Balance ❑ Compound inequality ❑ Equations ❑ exponent ❑ expressions ❑ function ❑ inequalities ❑ inverse relations ❑ linear equation ❑ permutation ❑ prime factorization ❑ rational number ❑ scientific notation ❑ table of values ❑ variable **Algebraic Thinking** ❑Identify a relationship and make generalizations from linear or non-linear sequences ❑Represent, simplify, and solve mathematical relationships and situations with expressions, equations, and inequalities. ❑Identify, interpret, represent, and solve functions in a coordinate system.	• Which equation shows the relationship between x and y? • If it is true that 16n < 16 and p > 0 and P < 16, what is true about n? • The inequality 70 degrees < x < 80 degrees represents the range of best water temperature for Sammy's fish. Which statement is true about the water temperature? • What is the value of x? • Which is equivalent to the expression below?

Math Content	Examples of Questions
geometry and measurement ❑ angles ❑ area ❑ area ❑ complementary angles ❑ conversion ❑ coordinate system ❑ cube ❑ estimate ❑ isosceles trapezoid ❑ line segment ❑ mass/weight ❑ measurable attributes ❑ pyramid (regular) ❑ rectangular prism ❑ rectangular pyramid ❑ right cylinder ❑ scale ❑ scale ❑ square prism ❑ surface area ❑ three dimensional ❑ transformations ❑ trapezoid ❑ triangular prism	• Which is the closest to the circumference of the circle? • How many milliliters are in N liters? • What is the surface area of the prism? • In a triangle, given two angles' degrees and x-5 for the third angle, what is the value of x? • Triangle XYZ is similar to triangle RST. What is the length of ST? • A cylinder is N inches tall. It has a radius of y inches. Which is the closest to the volume of the cylinder? • This picture is a scale drawing of an __. What is the height? • Line l intersects parallel lines m and n as shown. Which list contains all the angles that are congruent to angle 1? • Which drawing represents the top view of this solid? • KLMN is an isosceles trapezoid. The perimeter is 32cm. What is the area?
data analysis and probability ❑ chart ❑ circle graph ❑ graph ❑ line graph ❑ line plot ❑ mean/average ❑ median ❑ mode ❑ pattern ❑ predict ❑ probability ❑ range ❑ table ❑ tally, tally chart ❑ Venn diagram	• Mike as 2 red apples and 3 green apples. Without looking, he takes two apples. What is the probability that Make takes two red apples? • The circle graph represents a total of 240 animals. The shaded area represents the number of monkeys. How many of the animals are monkeys? • Which graph shows y = 3? • The graph of a line contains the points (5, 3) and (5, =1_. Which must be true about the graph of this line? • Which graph shows a line of best fit?